AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A correlation detection method capable of creating a delay profile of a reception signal with a delay equivalent to a maximum of X chips ~~(n: natural number)~~, where X is a natural number, the method comprising:

~~a first step of~~ extracting and fixing a first 1-symbol equivalent data from the data string of said reception signal;

~~a second step of~~ continuously generating spreading codes with a delay ~~in~~ increment of 1-chip ~~units~~ by changing ~~the~~ an amount of phase shift of the spreading codes ~~from~~ between 0 ~~chips~~ chip ~~to~~ and X chips, multiplying ~~said fixed~~ the first 1-symbol equivalent data by the spreading codes generated to obtain despreading results, ~~executing integration~~ integrating with respect to said despreading results while changing ~~the~~ integration segments ~~taking into account~~ in association with virtual delimiters of the reception signal symbols which are uniquely determined ~~according to the amount of~~ in accordance with the phase shift amount of said spreading codes and storing the integration values;

~~a third step of newly~~ further extracting and fixing a second 1-symbol equivalent data adjacent to ~~said~~ the first fixed 1-symbol equivalent data and ~~executing the same processing as said processing~~ performing the continuous generating of spreading codes;

~~a fourth step of adding up~~ adding integration values corresponding to the same ~~amount of~~ phase shift amount of the spreading codes obtained ~~in said second step and~~

~~said third step~~ by the continuously generating spreading codes and by the further extracting and fixing, which ~~can be~~ is assumed to be the integration values with respect to the same symbol when virtual delimiters of said reception signal symbols are considered and calculating a correlation value on one symbol; and

~~a fifth step of comparing among the~~ comparing calculated symbol-unit correlation values and detecting an amount of actual delay of said reception signal ~~by detecting a maximum~~ based upon a detected maximum correlation value.

2. (Currently Amended) The correlation detection method according to claim 1, ~~wherein~~ further comprising creating a delay profile of a reception signal with a delay longer than a 1-symbol equivalent time by ~~executing said~~ extracting and fixing, continuously generating, further extracting and fixing, adding and comparing steps using one matched filter.

3. (Currently Amended) A correlation detection method comprising:

~~a step of~~ temporarily storing input data, ~~and~~ fixing the data and despreading the fixed data while ~~changing the~~ shifting a phase of a spreading code;

~~a step of~~ integrating the despreading result with respect to a first-half symbol segment located before a uniquely determined symbol delimiter according to ~~the amount of~~ a phase shift amount of said spreading code and a last-half symbol segment located after the symbol delimiter; and

~~a step of adding the~~ adding an integration result of ~~said~~ the first-half symbol segment to ~~the~~ an integration result ~~corresponding to the same amount of~~ stored as a result of a previous integrating on the part of a symbol including the first-half symbol segment that corresponds to a same phase shift amount of the spreading code ~~phase~~

~~shift of said spreading code with respect to the same symbol stored as a result of the same processing as the previous processing~~, while temporarily storing ~~the~~ an integration result of said last-half symbol segment and adding the stored integration result to the integration result ~~corresponding to the same amount of phase shift of said spreading code with respect to the same symbol obtained as a result of executing the next same processing~~ of a next execution of the integrating on the part of a symbol including the last half symbol segment that corresponds to a same phase shift amount of the spreading code, and thereby detecting a symbol-unit correlation.

4. (Currently Amended) The correlation detection method according to claim 3, further comprising ~~a step of~~ comparing ~~among the detected~~ symbol-unit correlation values and detecting ~~the~~ an amount of actual delay of said input data ~~by detecting~~ based on a maximum detected correlation value.

5. (Currently Amended) The correlation detection method according to claim 3, wherein serial data with two or more alternately positioned types of signals ~~placed alternately~~ for one chip after another and multiplexed is used as said input data and data processing ~~timings of data processing are~~ timing is controlled according to ~~the~~ a level of multiplexing and ~~thereby the processing in said steps is~~ the temporarily storing, integrating, adding and comparing are carried out only on the signals subject to correlation detection of said two or more types of signals.

6. (Currently Amended) A matched filter comprising:

a temporary storage circuit that stores input data;

a spreading code generator that continuously generates spreading codes ~~whose~~ with a phase that is shifted one chip at a time;

a despreading calculation circuit that multiplies said input data stored in said temporary storage circuit by said spreading codes and generates dispreading results;

an integration circuit that integrates a despreading ~~results~~ result with respect to a first-half symbol segment located before a uniquely determined symbol delimiter ~~according to the amount of~~ based upon a phase shift amount of said spreading code and a dispreading result with respect to a last-half symbol segment located after the symbol delimiter;

a storage circuit that temporarily stores the integration result of said last-half symbol segment; and

a calculation circuit that adds ~~the~~ an integration result with respect to said first-half symbol segment to the integration result ~~corresponding to the same amount of phase shift of said spreading code with respect to the same symbol stored in said storing means as a result of the same processing as the previous processing~~ stored in said storage circuit as a result of a previous processing in said dispreading calculation circuit and said integration circuit on part of a symbol including said first half symbol segment that corresponds to a same phase shift amount of said spreading code, and outputs a correlation value on one symbol.

7. (Currently Amended) The matched filter according to claim 6, wherein said integration circuit obtains ~~an~~ the integration result of said first-half segment by subtracting the integration result of said last-half segment from ~~the~~ an integration result obtained by ~~carrying out~~ performing an integration calculation on all output bits of said despreading calculation circuit.

8. (Currently Amended) A matched filter comprising:

a temporary storage circuit that stores input data;

a spreading code generator that continuously generates spreading codes ~~whose~~ with a phase that is shifted one chip at a time;

a despreading calculation circuit that multiplies said input data stored in said temporary storage circuit by said spreading codes;

~~a cumulative~~ an addition calculation ~~section~~ circuit that ~~cumulatively~~ adds ~~up~~ data bits sequentially output from said despreading calculation circuit ~~one after another~~ starting from ~~the~~ a least significant bit or ~~the~~ a most significant bit and outputs a plurality of resulting ~~cumulative~~ addition values in parallel;

a selector that selects said plurality of ~~cumulative~~ addition values output from said ~~cumulative~~ addition calculation ~~section~~ circuit;

a first calculation circuit that calculates an integration value of the despreading result with respect to a first-half symbol segment located before a symbol delimiter uniquely determined ~~according to the amount of~~ based on a phase shift amount of said spreading code by subtracting the ~~cumulative~~ addition ~~value~~ values selected by said selector from ~~the~~ an integration result obtained by ~~carrying out~~ an integration with respect to all output bits of said despreading calculation circuit; and

a second calculation circuit that adds said integration value with respect to said first-half symbol segment to ~~the~~ an integration value ~~corresponding to the amount of said phase shift of the spreading code with respect to the same~~ that is stored as a result of a previous processing in said first calculation circuit on part of a symbol that includes said first half symbol segment and that corresponds to the phase shift amount of the

spreading code symbol acquired and stored as a result of the same ~~processing as the previous processing~~ and outputs a correlation value on one symbol.

9. (Currently Amended) A matched filter that extracts and fixes data of a predetermined width from serial data with two or more alternately positioned types of signals ~~placed alternately~~ for one chip after another and multiplexed, and despreads ~~this~~ the fixed data by continuously multiplying the fixed data by spreading codes ~~whose amount of~~ with a shift amount that changes from one chip after another to calculate a correlation value, the filter comprising:

a temporary storage circuit that stores data with said predetermined width;

a spreading code generator that continuously generates spreading codes ~~whose~~ having a phase ~~is shifted~~ shift of one chip at a time;

a despreading calculation circuit that multiplies said input data stored in said temporary storage circuit by said spreading codes;

an integration circuit that controls data processing timing according to ~~the~~ a level of multiplexing of said fixed data and ~~thereby substantially~~ applies signal processing ~~to~~ only to signals subject to correlation detection of said two or more types of signals, and obtains integration values by integrating ~~the~~ a despreading ~~results~~ result with respect to a first-half symbol segment located before a symbol delimiter uniquely determined according to the ~~amount of~~ phase shift amount of said spreading code on the signals subject to the correlation detection and a dispreading result with respect to a last-half symbol segment located after the symbol delimiter;

a storage circuit that temporarily stores ~~the~~ an integration result of said last-half symbol segment; and

a calculation ~~segment~~ circuit that adds ~~the~~ an integration result of said first-half symbol segment to ~~the~~ an integration result ~~corresponding to the amount of the same phase shift of spreading codes on the same symbol stored in said storing means as a result of the same processing as the previous processing~~ that is stored in said storage circuit as a result of a previous processing in the calculation circuit on part of a symbol including said first half symbol segment and that corresponds to a same phase shift amount of said spreading code and outputs a correlation value on one symbol.

10. (Currently Amended) The matched filter according to claim 9, wherein said integration circuit controls ~~the~~ a range of integration using a shift register.

11. (Currently Amended) The matched filter according to claim 10, ~~wherein said integration circuit controls the range of integration using a shift register and~~ further comprising an inversion/non-inversion control circuit that controls inversion/non-inversion of ~~the~~ output bits of said shift register.

12. (Currently Amended) A CDMA reception apparatus comprising the matched filter according to claim 6 that ~~carries out~~ performs synchronization acquisition processing or synchronization follow-up processing based on ~~the~~ a correlation ~~detection result~~ value of said matched filter.

13. (Currently Amended) A mobile communication base station apparatus that acquires synchronization of a spread spectrum modulated signal using the matched filter according to claim 6 and carries out communication control based on ~~the acquired~~ a synchronization timing acquired by said synchronization.

14. (Currently Amended) A mobile communication terminal apparatus that acquires synchronization of a spread spectrum modulated signal using the matched

filter according to claim 6 and carries out communication control based on ~~the~~ a synchronization timing acquired by said synchronization ~~timing~~.